

# Narda Satellite Networks

## 0E-593/F

### 3.9M MULTI-BAND LIGHTWEIGHT MEDIUM APERTURE ANTENNA (LMAA)

#### **Configuration:**

The L-3 Narda Satellite Networks 3.9M Lightweight Medium Aperture Antenna (LMAA) is a lightweight, high gain, quad-band antenna subsystem for delivering quick response satellite communications (SATCOM). The 3.9 LMAA addresses military and civil government requirements for a medium-aperture antenna packed in transit cases less than one half of a 463L pallet.

#### **The 3.9M Lightweight Medium Aperture Antenna (LMAA) includes:**

- 3.9-meter segmented reflector
- Transit case configuration
- Functional packaging
- Advanced technology antenna control available
- ACU override for manual control

#### **Key Features:**

- Quad-Band (C-, X-, Ku-, Ka-Bands)
- Pedestal designed for superior stability operation
- Lightweight construction
- Field-replaceable components
- Automatic satellite acquisition and tracking
- Ruggedized transit cases, five of which form an integral part of the support structure
- Lightning protection
- Quick setup/take-down <1 hour
- Packs in transit cases less than one half of a 463L pallet
- XTAR- and WGS-ready
- WGS certified

#### **Quad-Band Operating Frequencies:**

Government: X- and Ka-Band  
Commercial: C-, Ku-Band and XTAR



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#### PERFORMANCE SPECIFICATIONS

Electrical Performance	C-Band 2-Port Linear Cross Pol Feed		C-Band 2-Port Circular Pol Feed or Linear co-Pol Feed		X-Band 2-Port Reversible Circular Cross Pol Feed		Ku-Band 3-Port Co & Cross Pol Feed		Ka-Band 2-Port Reversible Circular Pol Feed	
	Receive	Transmit	Receive	Transmit	Receive	Transmit	Receive	Transmit	Receive	Transmit
Frequency (GHz)	3.400 - 4.200	5.850 - 6.650	3.625 - 4.200	5.850 - 6.425	7.250 - 7.750	7.900 - 8.400	10.950 - 12.750	13.750 - 14.500	20.200 - 21.200	30.000 - 31.000
Antenna Gain at Lowband (dBi)	40.2	45.1	40.7	45.1	46.7	47.7	50.2	52.5	55.2	58.3
G/T at 10° Elevation/EIRP	21.3 dB/K	67.5 dBW	21.8 dB/K	67.5 dBW	25.5 dB/K	71.0 dBW	29.0 dB/K	74.5 dBW	31.5 dB/K	75.5 dBW
Cross-Polarization On-Axis within 1 dB Beamwidth	30 dB 28 dB	30 dB 28 dB	30 dB 28 dB	30 dB 28 dB			35 dB 27 dB	35 dB 35 dB		
Sidelobe	IESS Std F-1		IESS Std F-1		MIL-STD-188-164A / DSCS TCR		IESS Std E-2		MIL-STD-188-164A / WGS TCR	
Axial Ratio (VAR)			1.16 VAR	1.09 VAR	1.15 VAR	1.26 VAR			1.19 VAR	1.12 VAR
VSWR Performance	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1	1.35:1	1.25:1	1.30:1	1.30:1

#### Port-to-Port Isolation

Tx/Rx (Rx Freq) transmit reject filtering incl.	30 dB		30 dB		26 dB		35 dB		35 dB	
Tx/Rx (Tx Freq) transmit reject filtering incl.		95 dB		95 dB		95 dB		95 dB		95 dB
Waveguide Interface Flange	CPR-229	CPR-137	CPR-229	CPR-137	CPR-137	WR-112	WR-75	WR-75	WR-42	WR-28
Total Power Handling Capability		1 kW cW		500 W CW		1 kW CW		1 kW CW		1 kW CW

#### Environmental Conditions

Wind:	Operation	25 mph Steady-state (un-anchored) With gusts up to 40 mph (anchored)
	Survival Deployed	45 mph gusting to 60 mph w / anchoring)
	Survival Stowed Pointing Loss	90 mph max. (w / anchoring) ≤ 2.0 dB (Ka-Band): 25 mph, gusting 40 mph
Solar Radiation:	360 BTU/h/ft2	
Temperature:	Operational	-22° to 140° F (-30° to 60° C)
	Survival	-40° to 160° F (- 40° to 71° C)
Rain:	Non-operational	Up to 4 in/hr. (102 mm/hr)
	Operational	Up to 2 in/hr.
Ice:	Operational	1/2" (13mm)*
	Survival	1"
Snow:	Survival	10lb/ft2
Relative Humidity:	5% to 100%	
Sand:	Particles driven by wind up to 40 mph (64 km/h)	
Salt:	As encountered in moderately corrosive costal environments	

\* Ice and snow must be manually removed from the reflector surface and feed window for Ka operation

#### Design Features

- The entire antenna subsystem is contained in nine (9) ruggedized transit cases. These cases are designed for military transport, by road, rail and air. Five (5) of the interlocking transit cases also function as part of the pedestal/ support structure
- The highly efficient antenna design provides excellent gain and side-lobe pattern performance at C-, X-, Ku- and Ka- frequency bands
- Sustainability is optimized with field-replaceable components and minimal maintenance requirements

#### Physical Characteristics

Total weight:	1,675 lbs.
Volume:	< 1/2 of a 463L pallet
Setup:	< 1hr
Fasteners:	Captive

ISO 9001



SATCOM Group

#### Narda Satellite Networks

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L-3. Headquartered in New York City, L-3 Communications is a prime contractor in aircraft modernization and maintenance, C<sup>3</sup>ISR (Command, Control, Communications, Intelligence, Surveillance and Reconnaissance) systems and government services. L-3 is also a leading provider of high technology products, subsystems and systems.

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